

Diagram illustrating the biosynthetic pathway of PHB (Polyhydroxybutyrate):

- Two molecules of acetyl CoA are converted to acetoacetyl CoA by the enzyme **PhbA** (β -ketothiolase). This step is reversible and involves the release of HS-CoA .
- Acetoacetyl CoA is reduced to (D)-3-hydroxybutyryl-CoA by the enzyme **PhbB** (acetoacetyl-CoA reductase). This step is reversible and involves the consumption of NADPH (measured at $A_{340\text{nm}}$) and the production of NADP^+ .
- (D)-3-hydroxybutyryl-CoA is polymerized by the enzyme **PhbC** (synthase) to form the PHB polymer chain. This step is irreversible and involves the release of HS-CoA .

The final product is the PHB polymer, represented by the repeat unit $\left[\text{O}-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{C}(=\text{O}) \right]_n$.

17

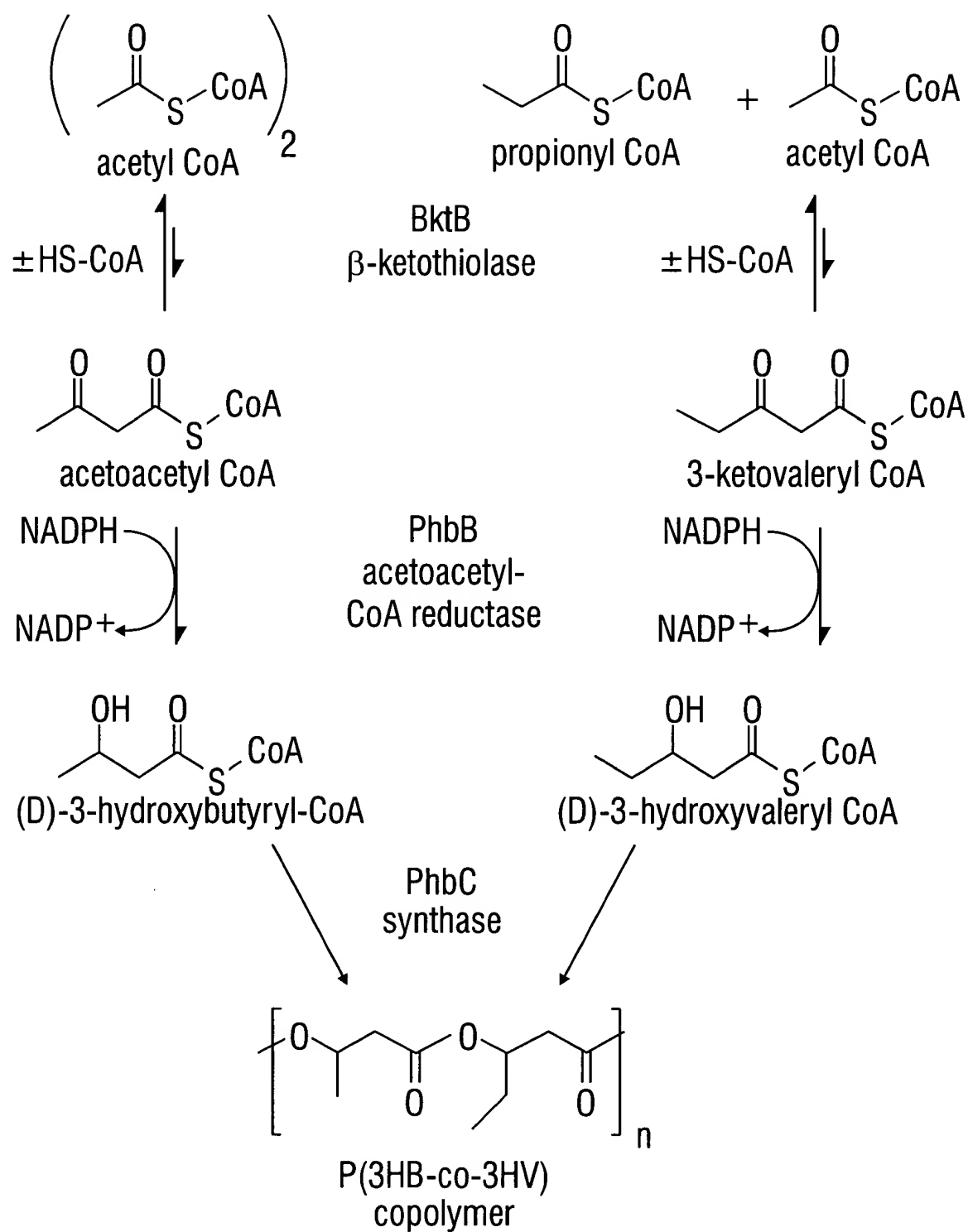


FIG. 2

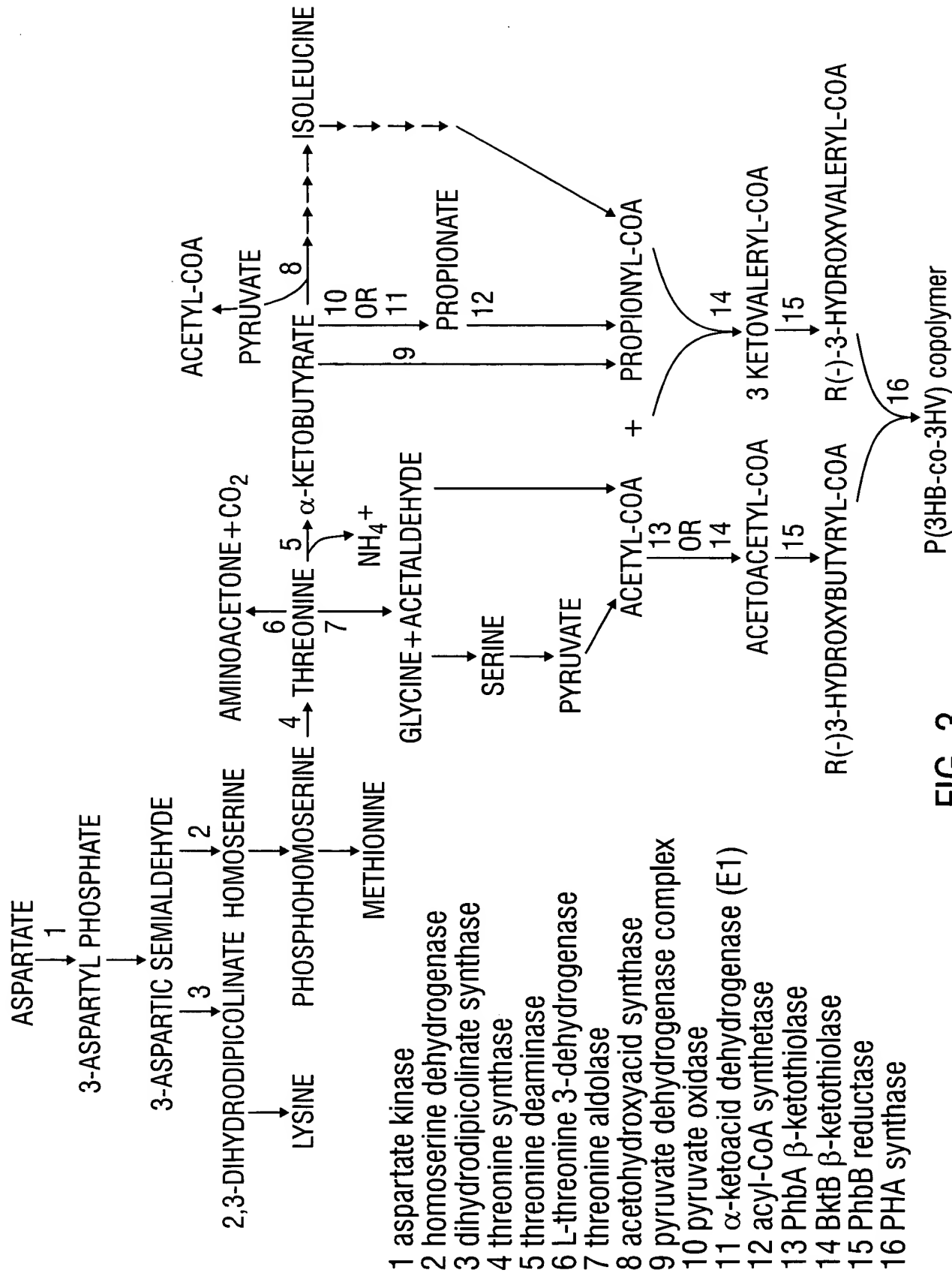


FIG. 3

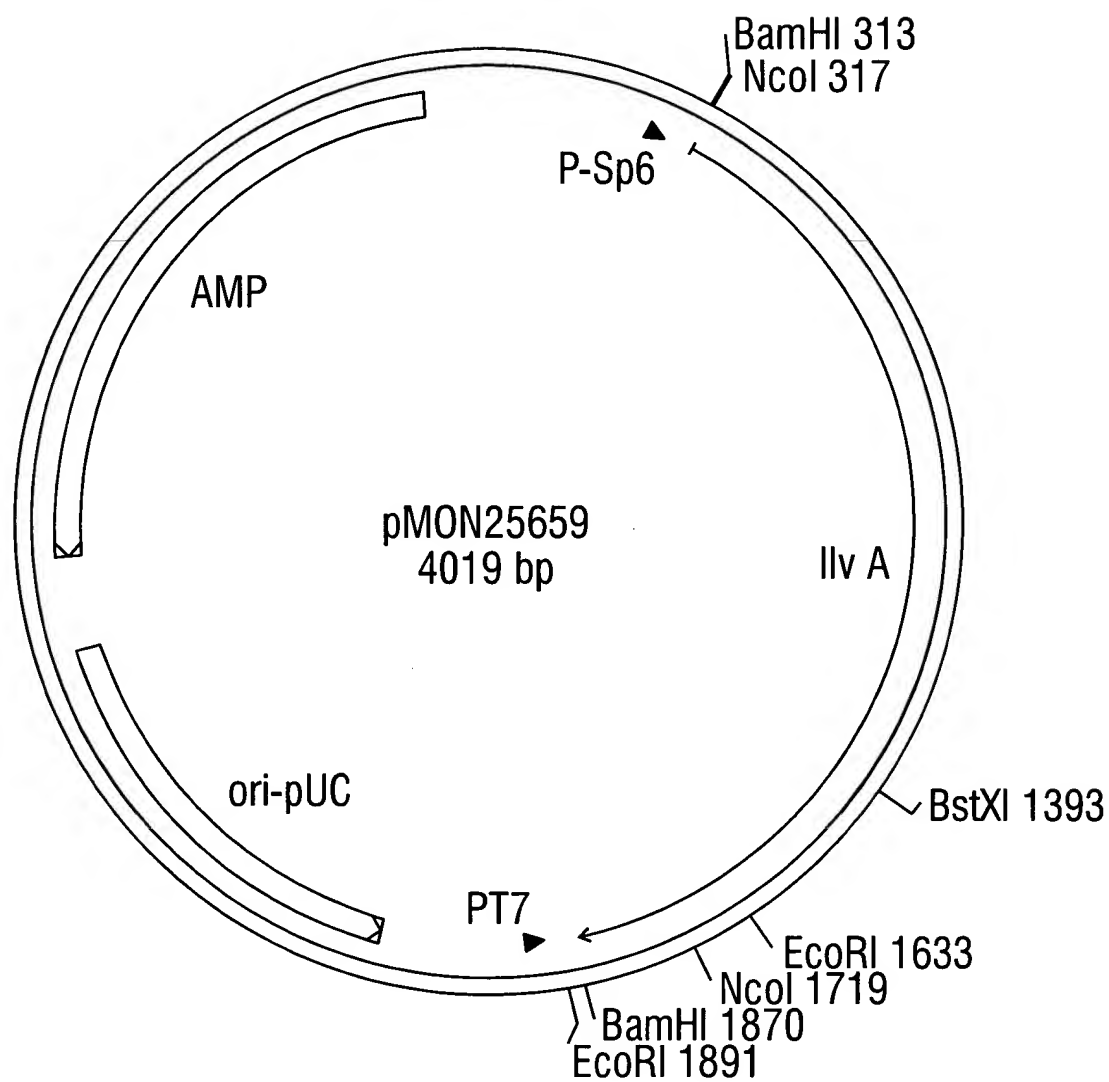


FIG. 4

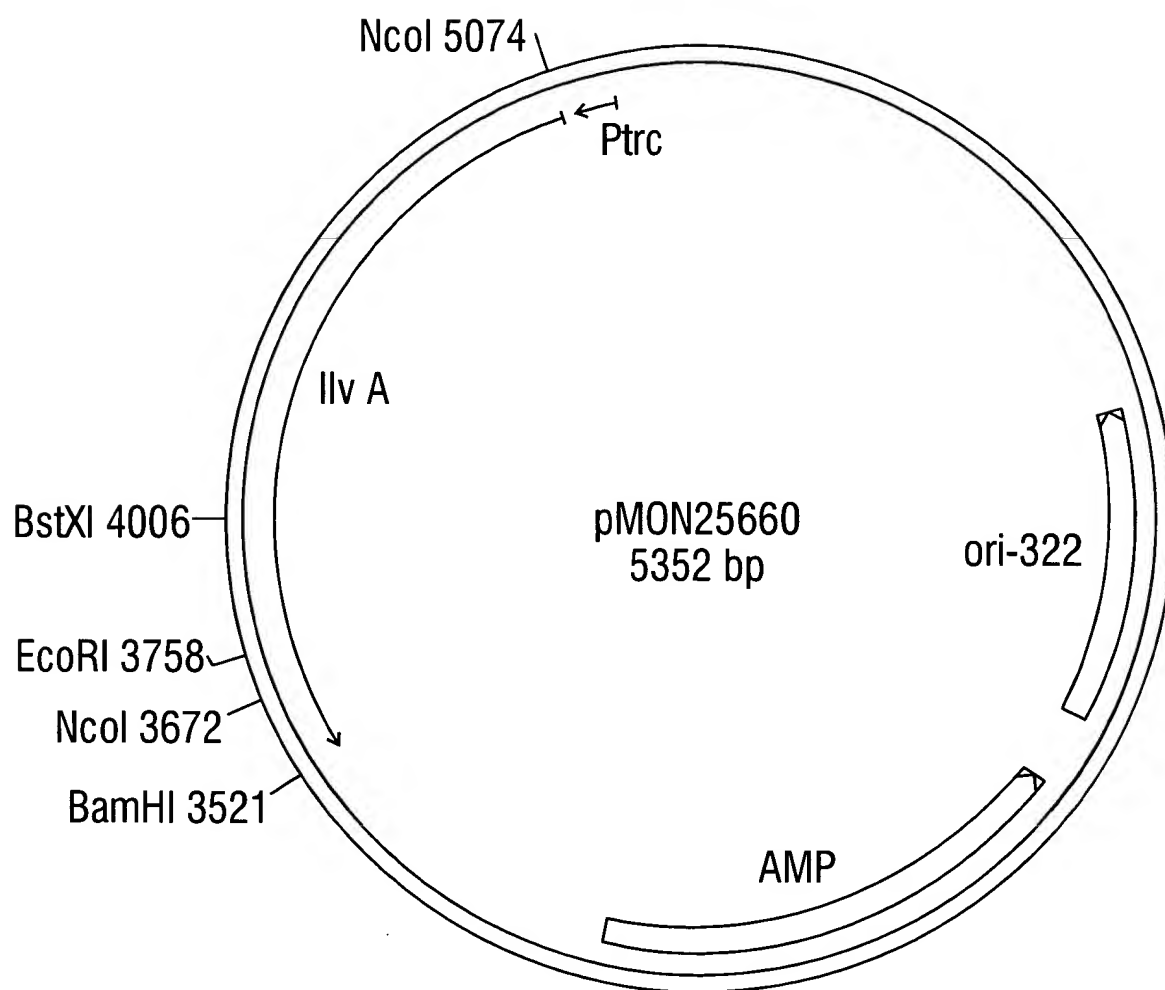


FIG. 5

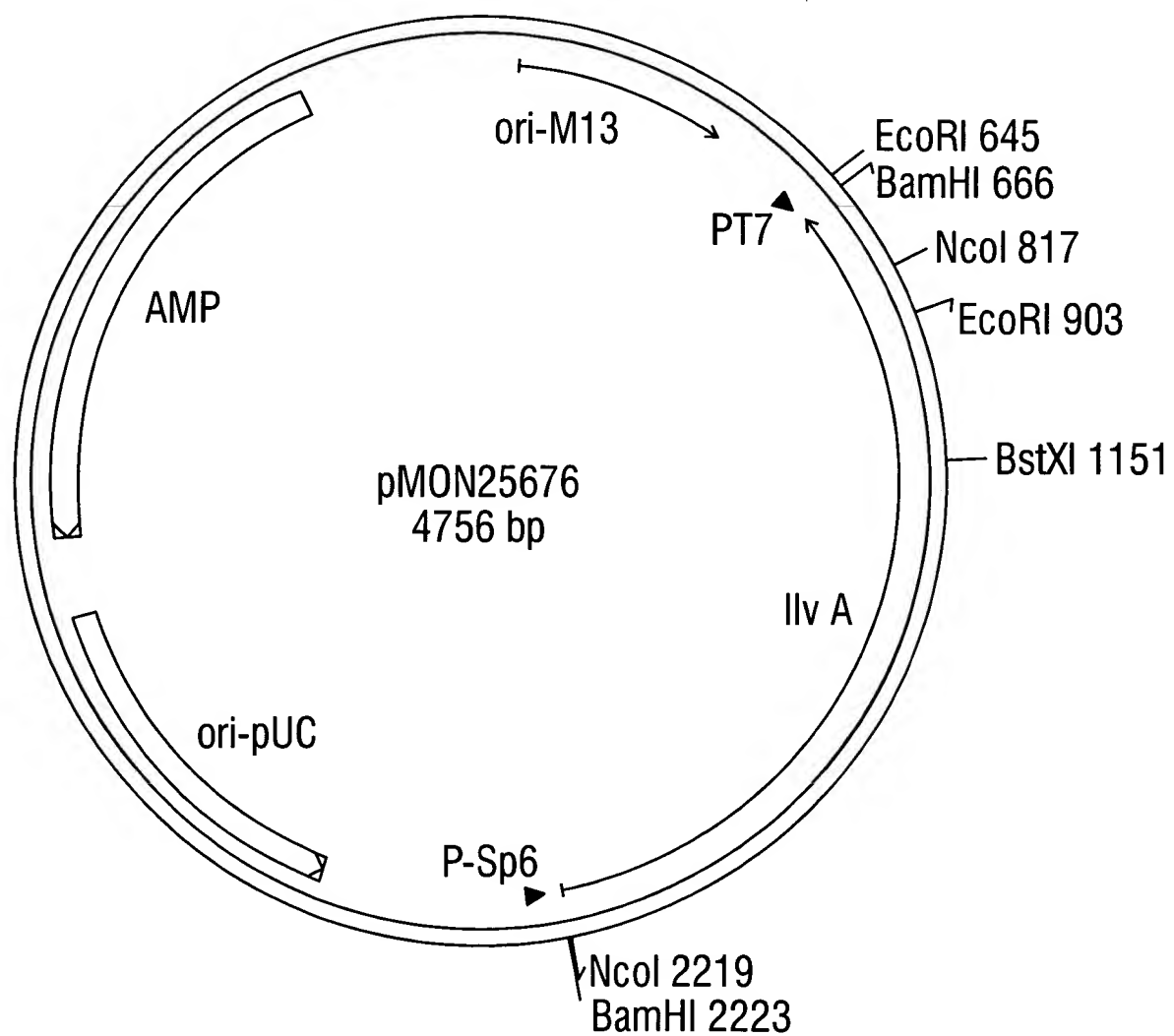


FIG. 6

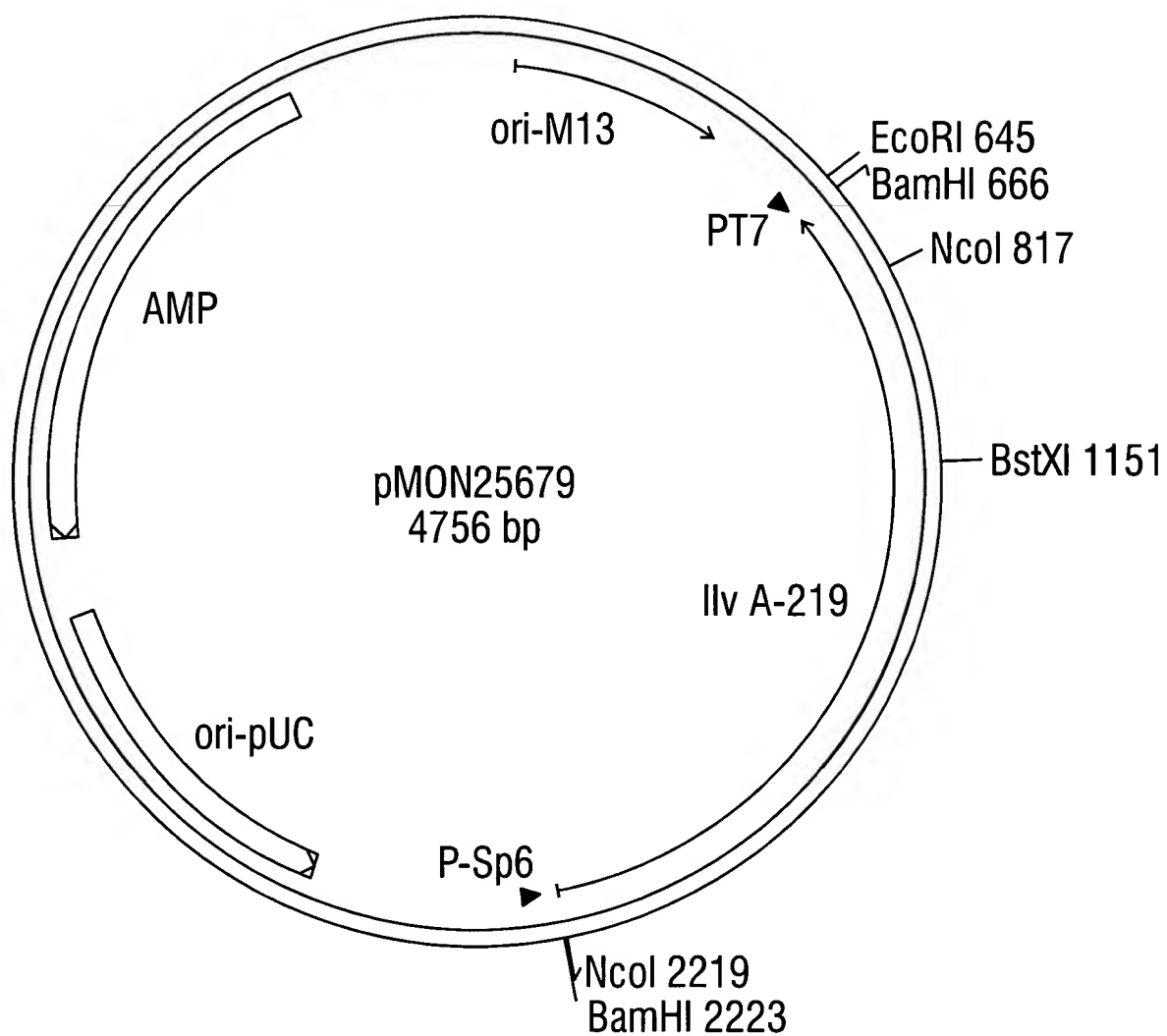


FIG. 7

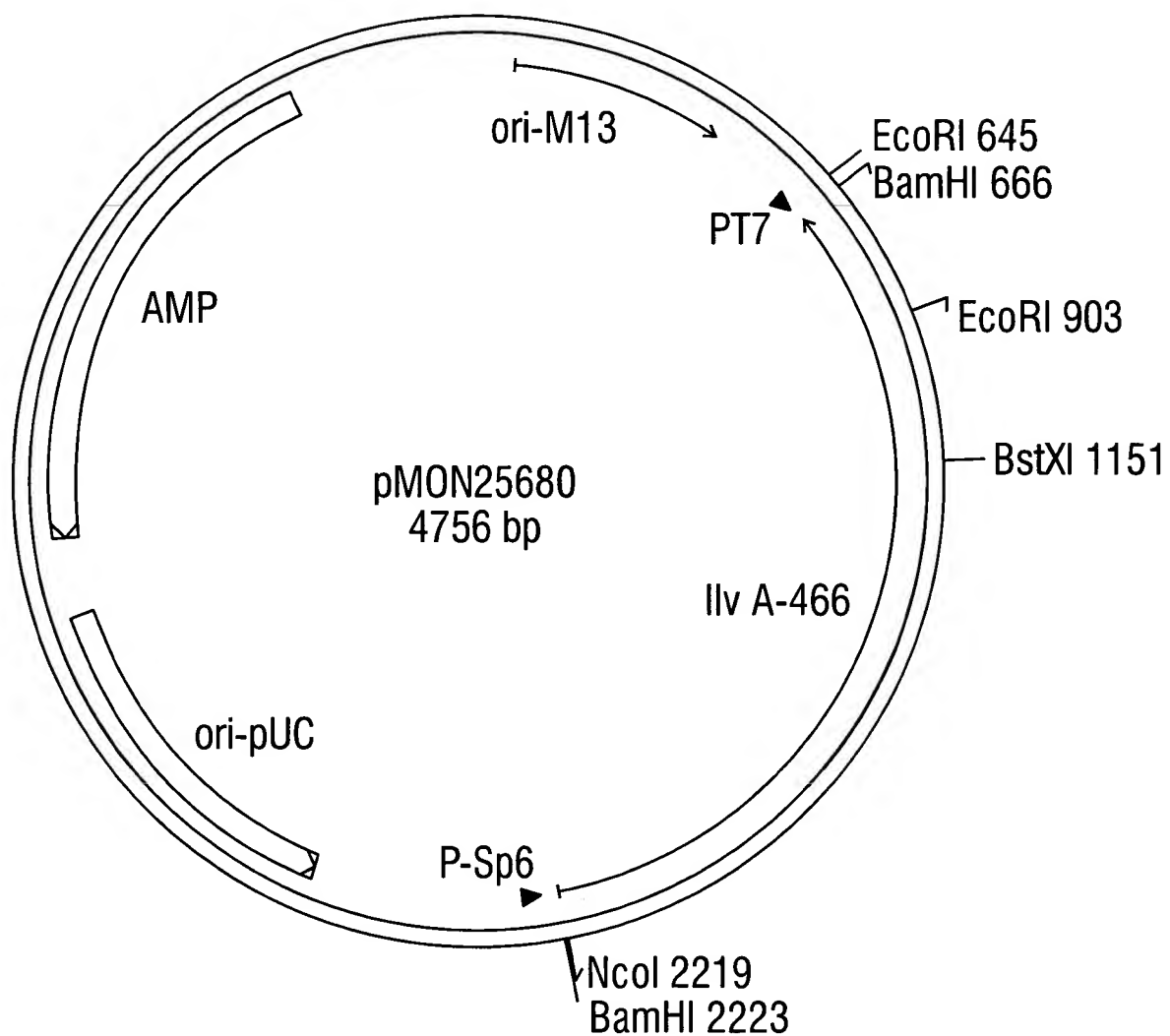


FIG. 8

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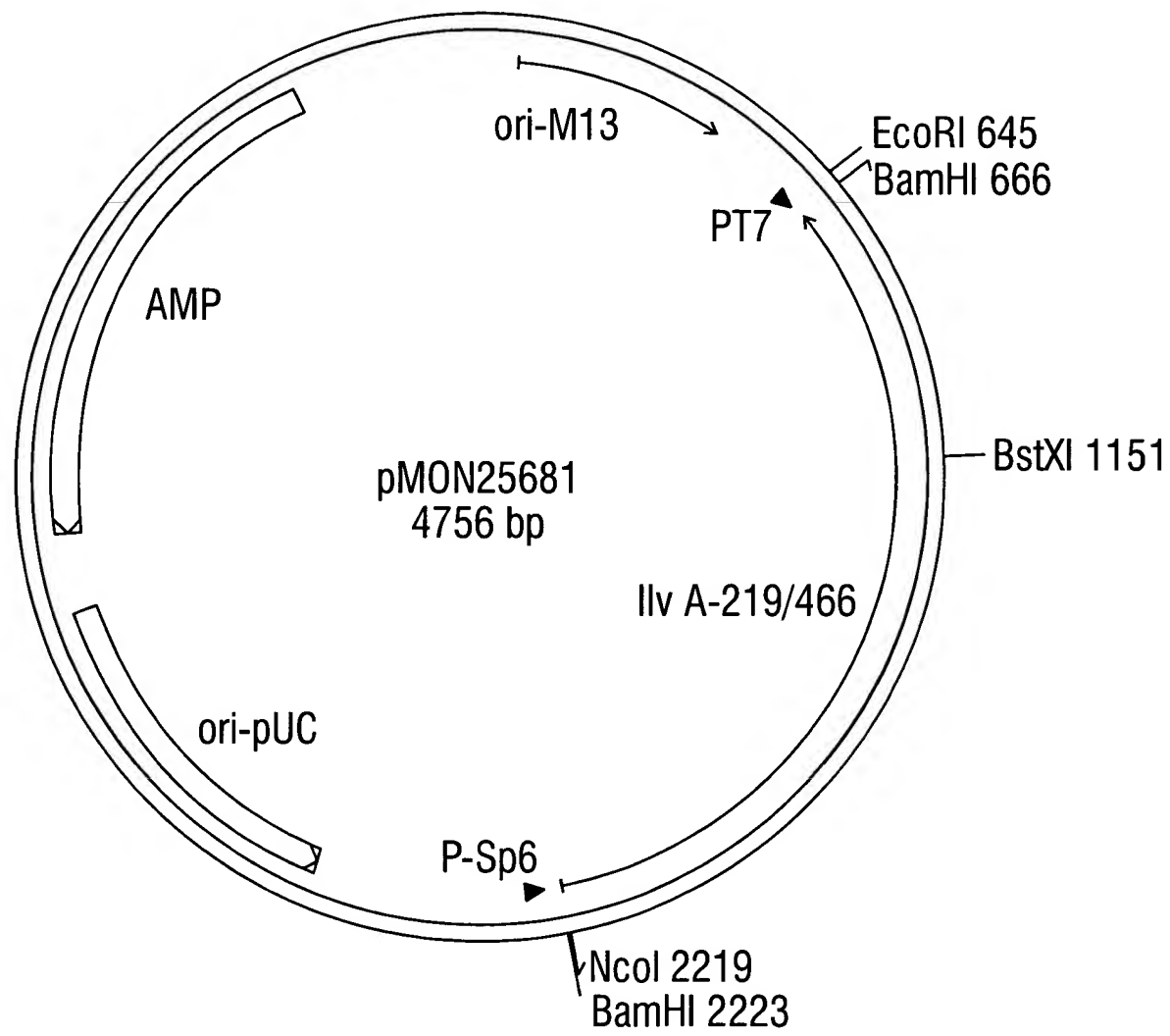


FIG. 9

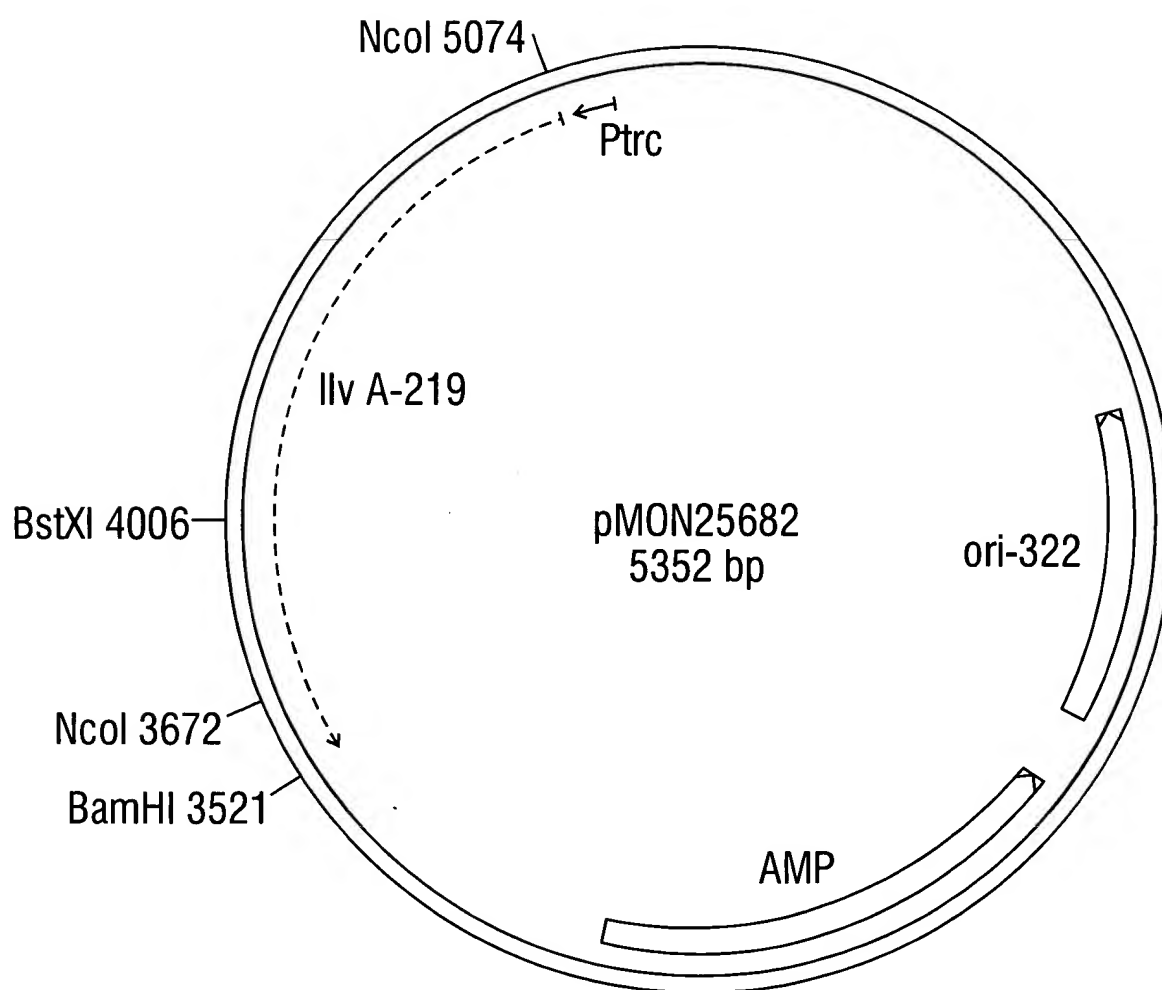


FIG. 10

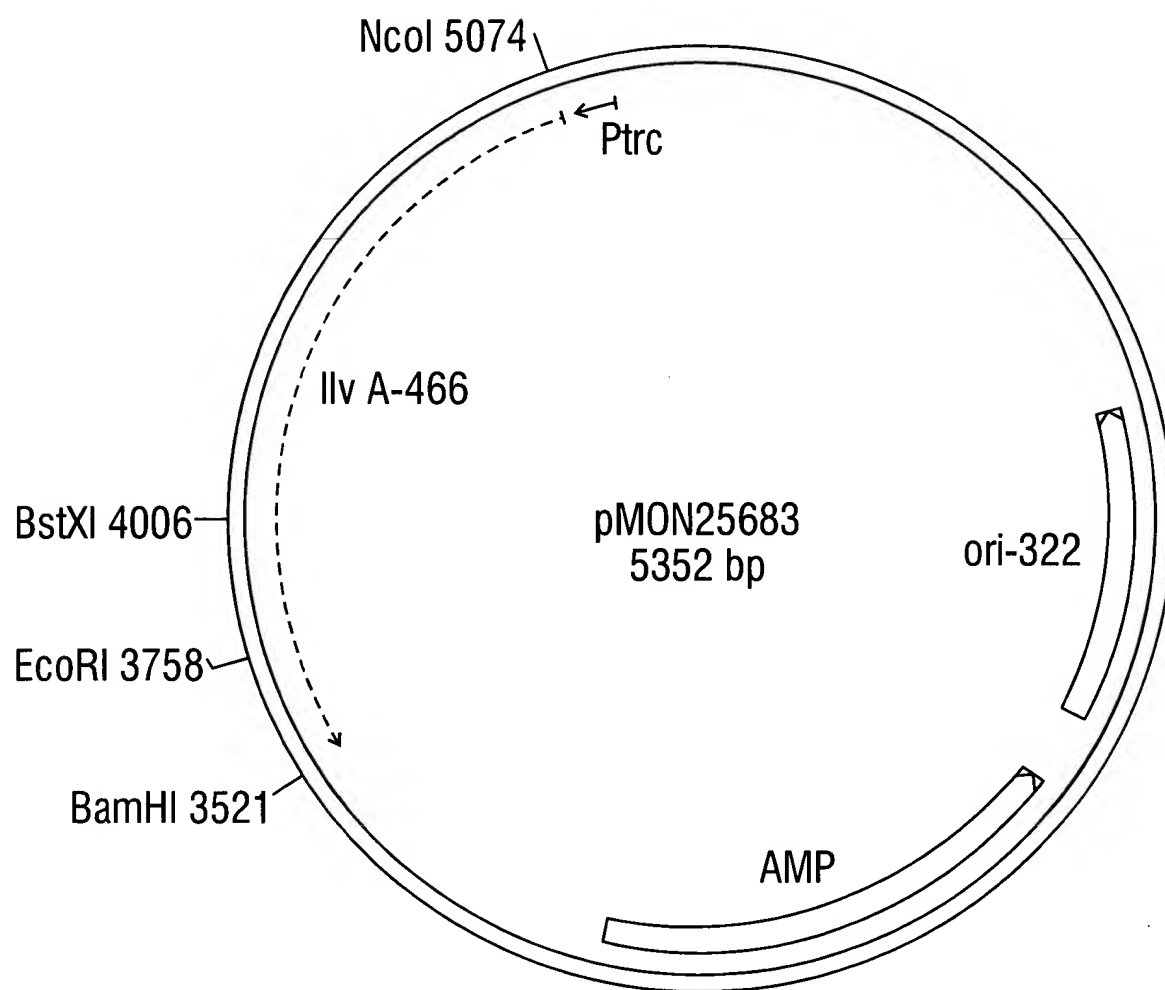


FIG. 11

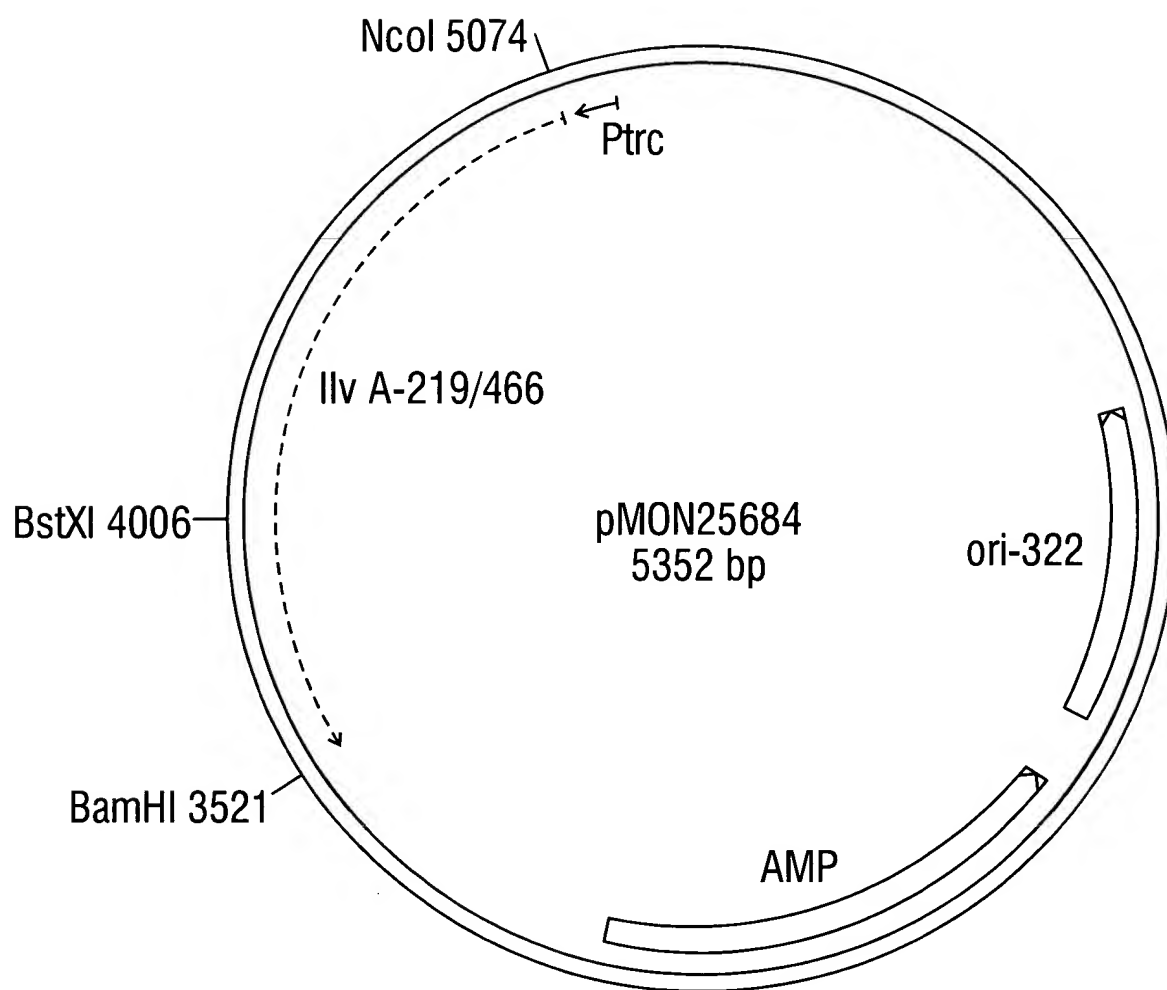


FIG. 12

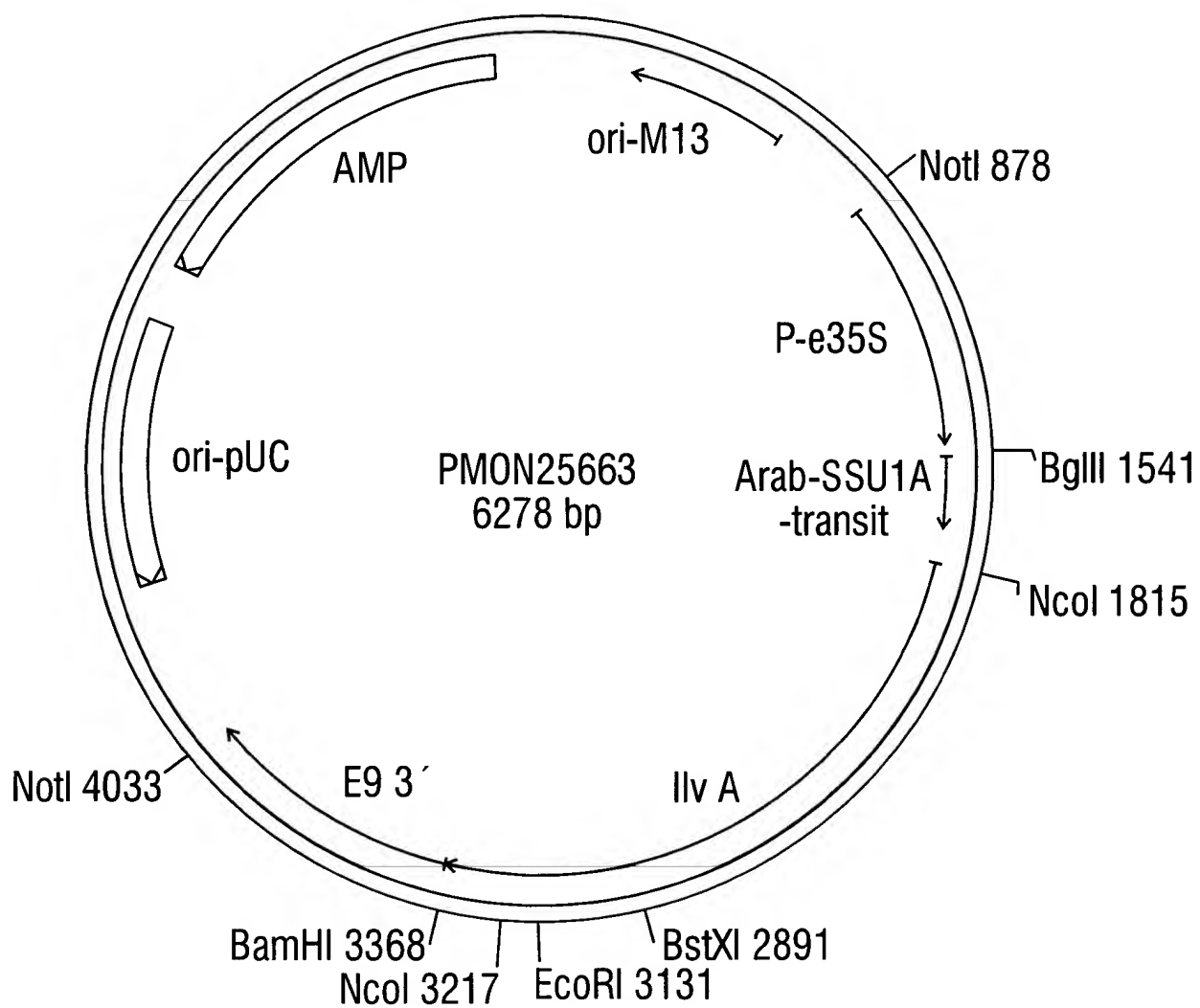


FIG. 13

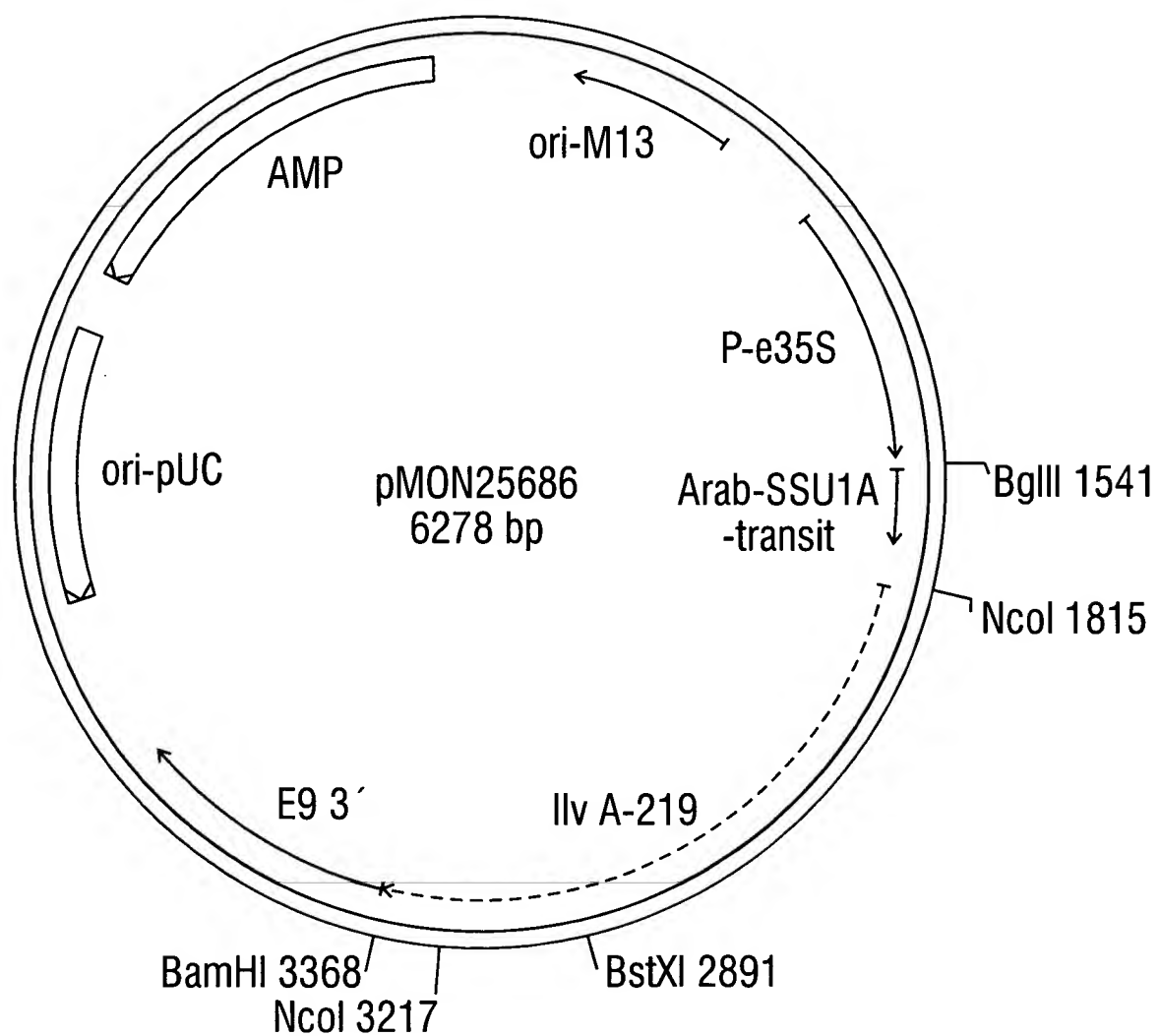


FIG. 14

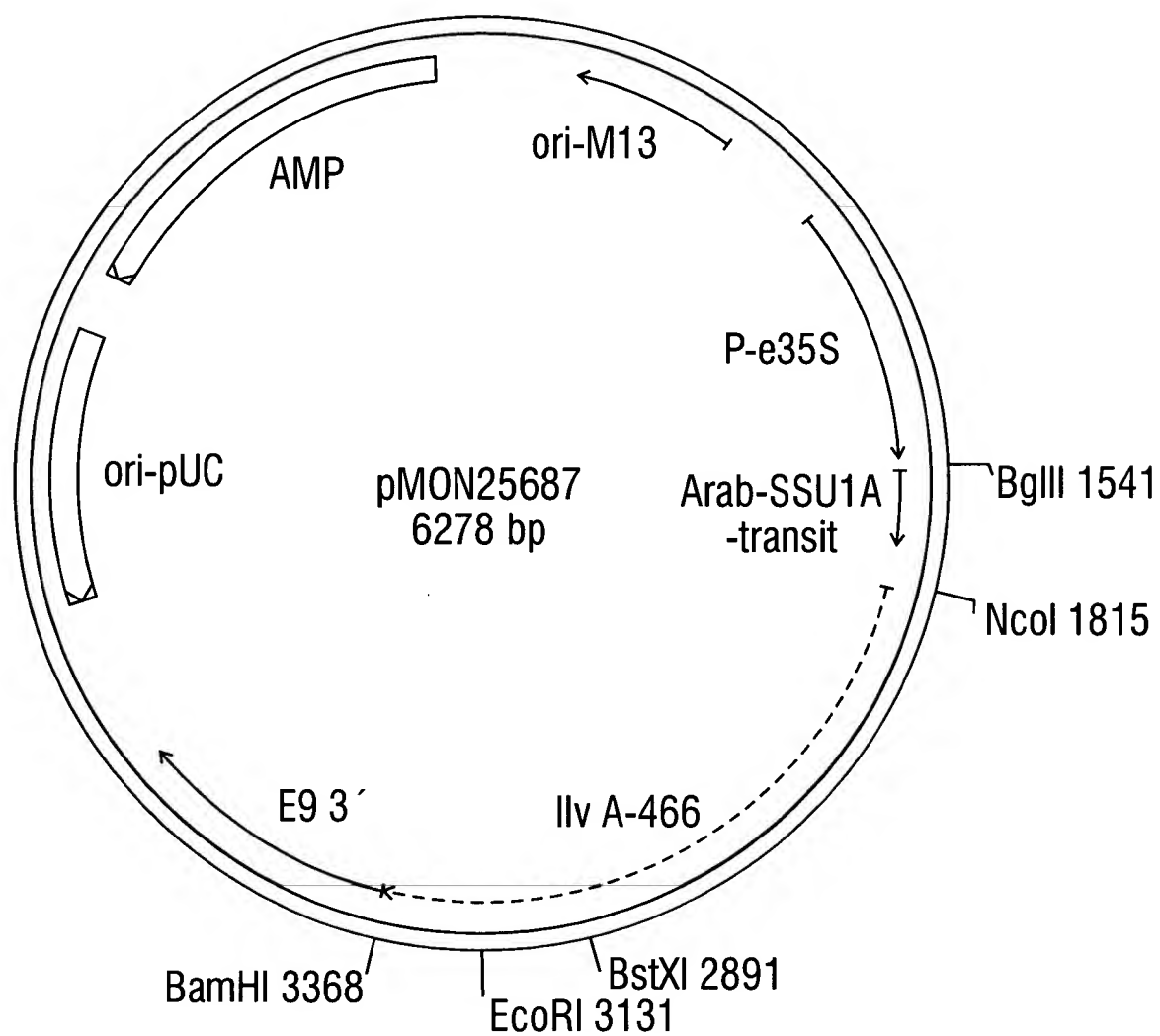


FIG. 15

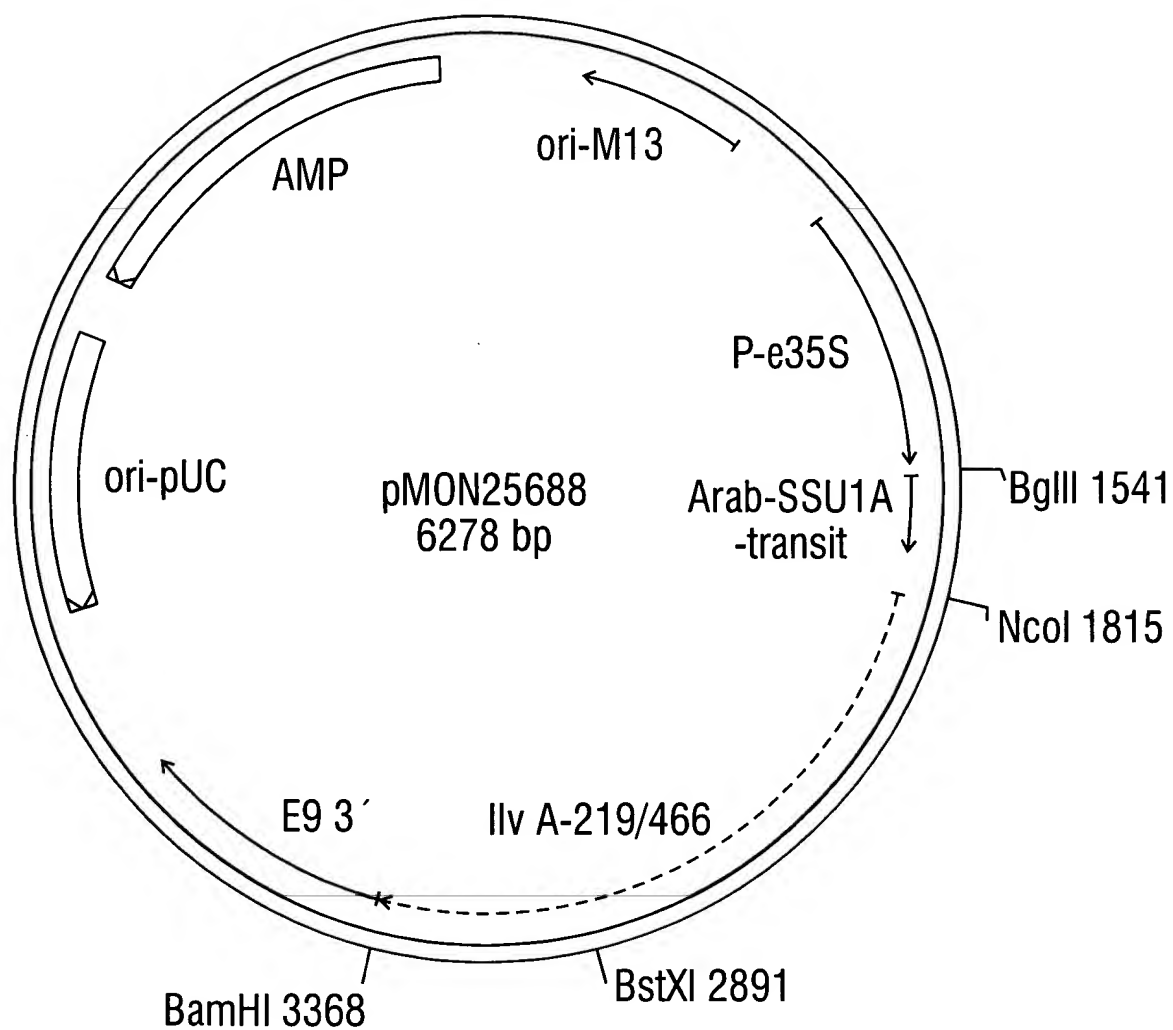


FIG. 16

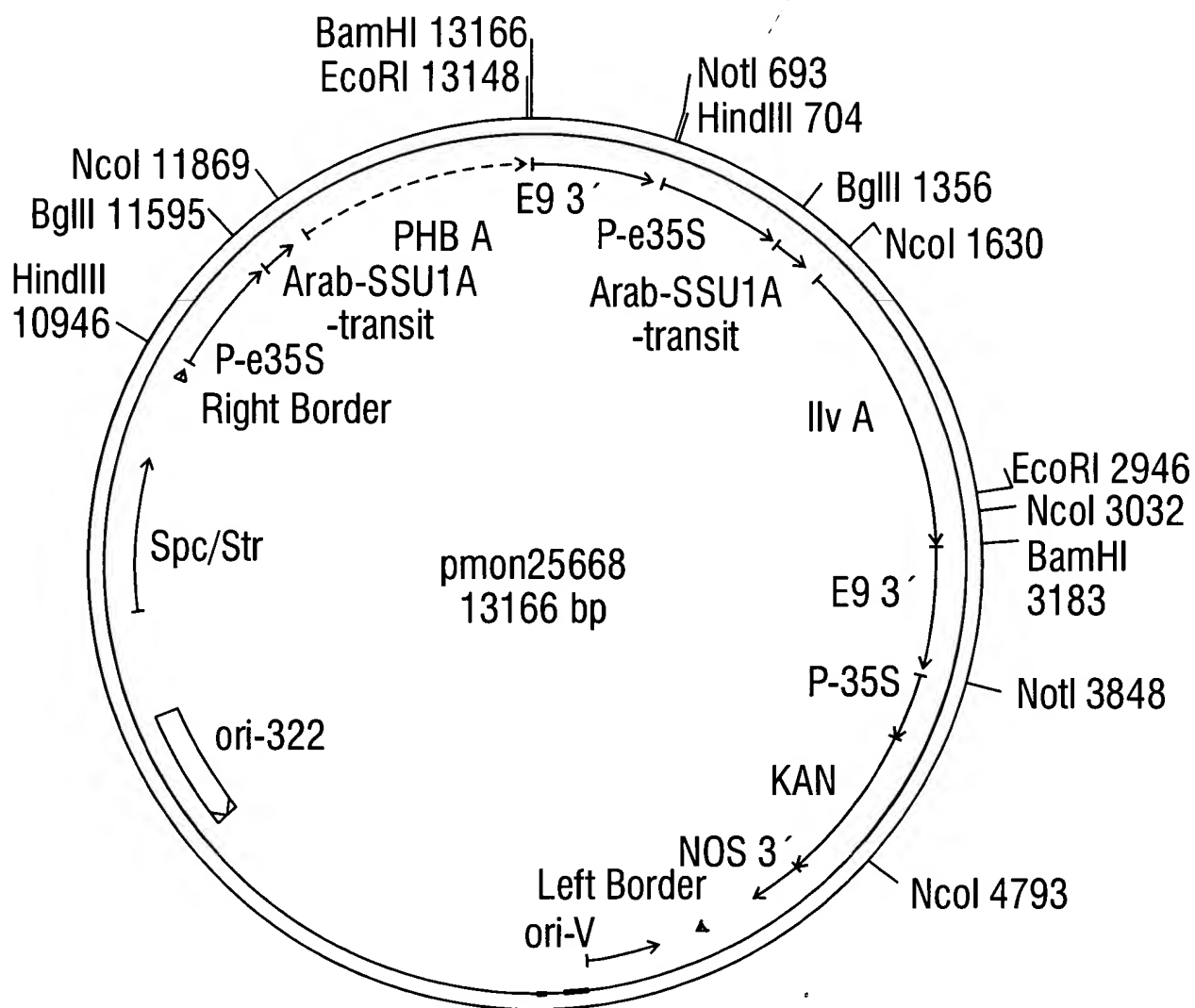


FIG. 17

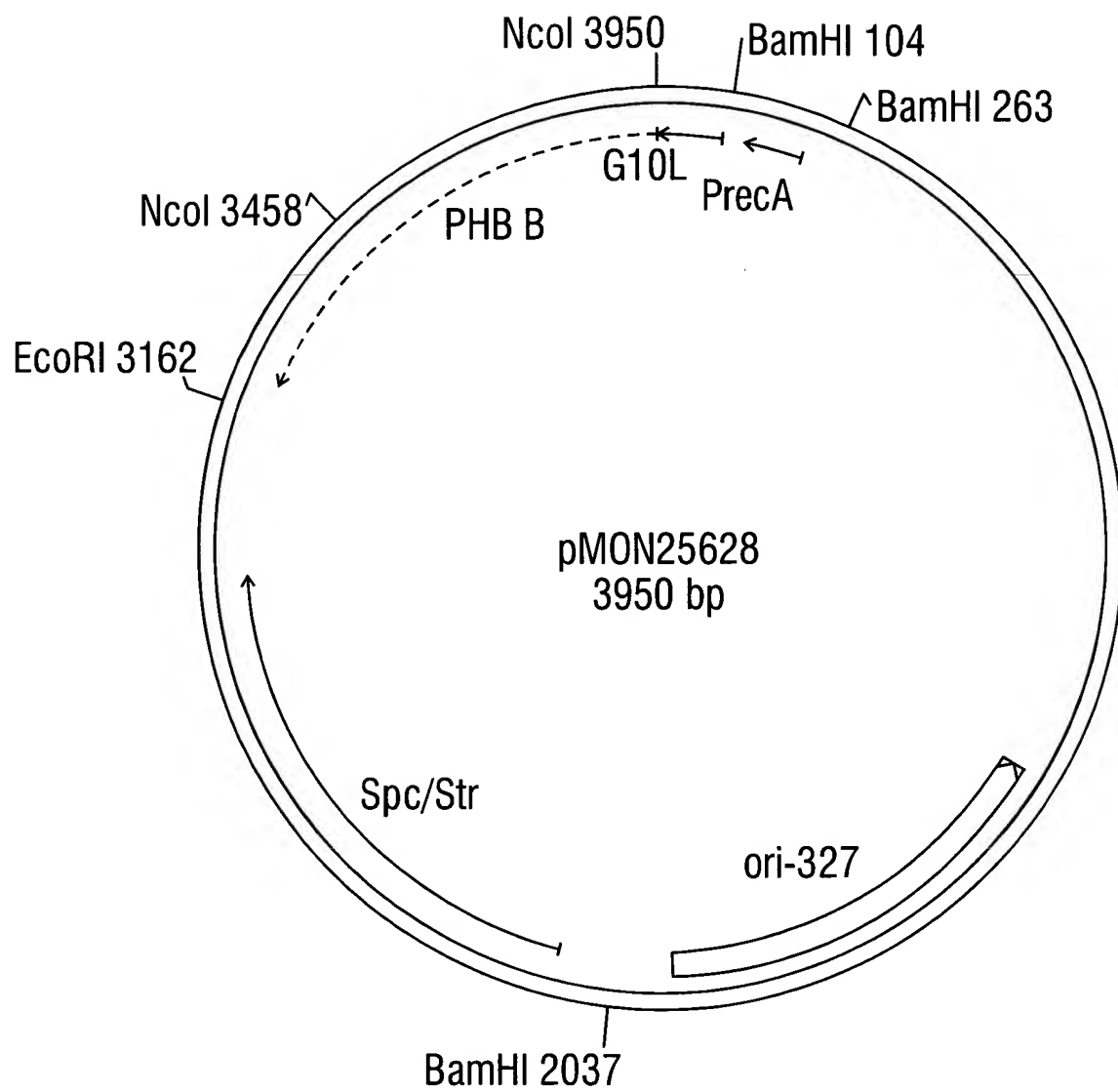


FIG. 18

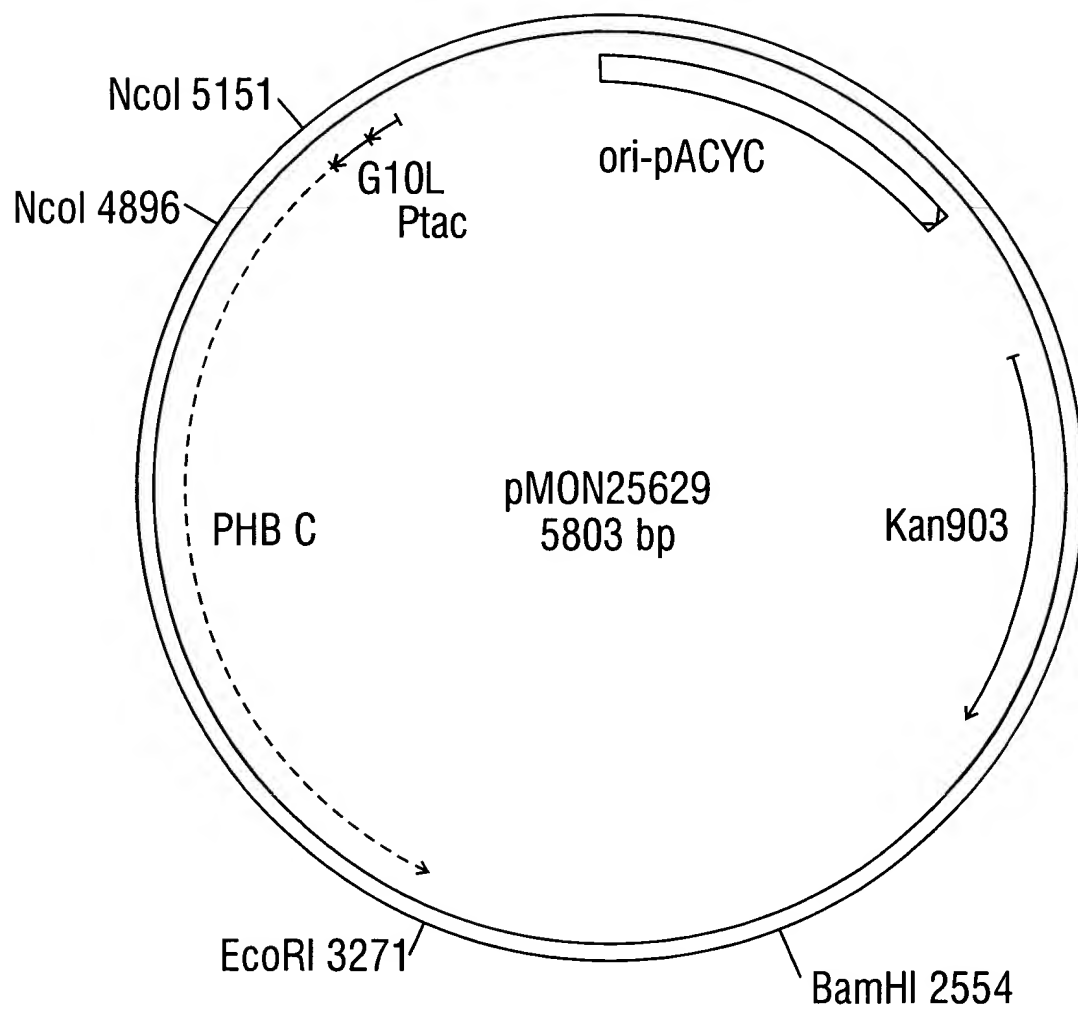


FIG. 19

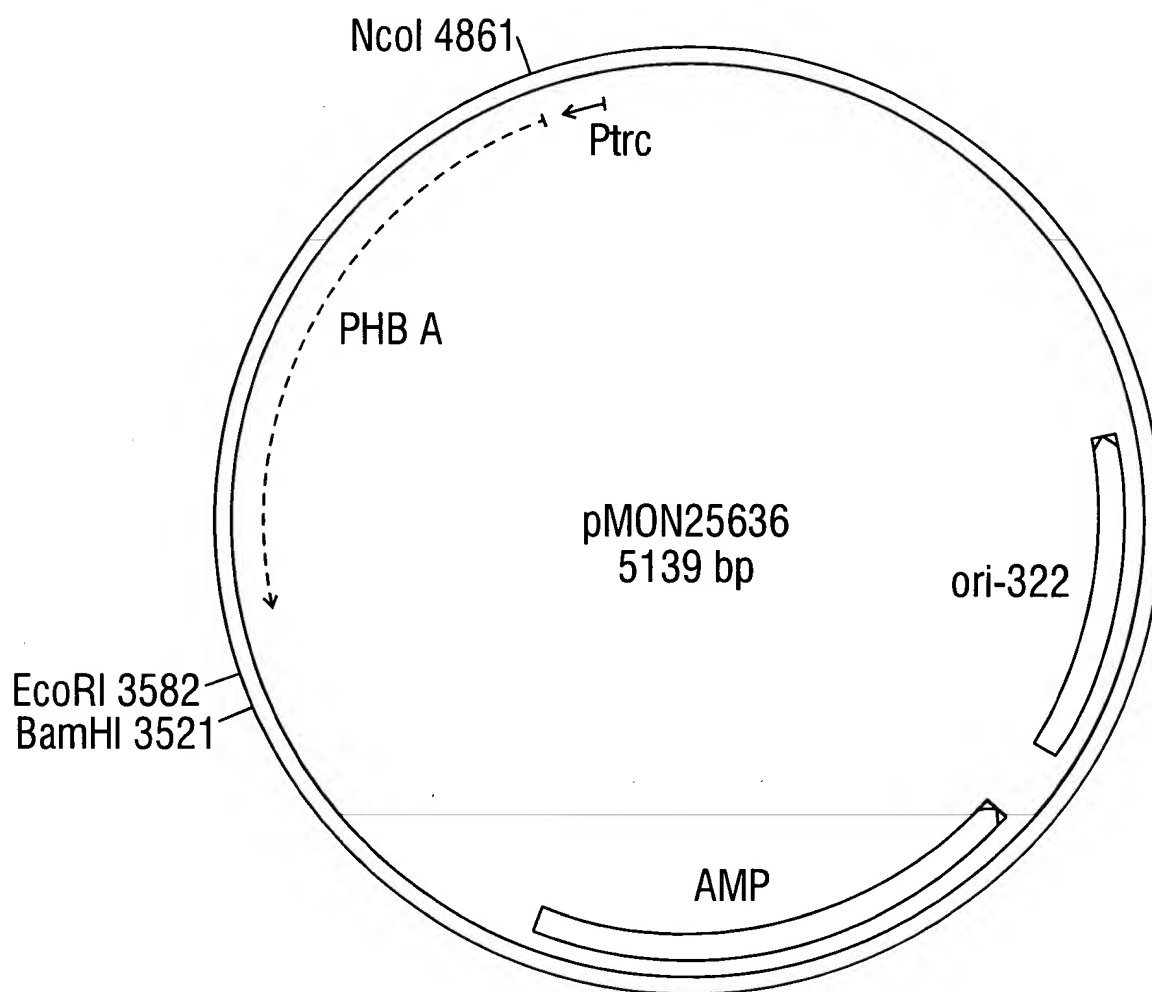


FIG. 20

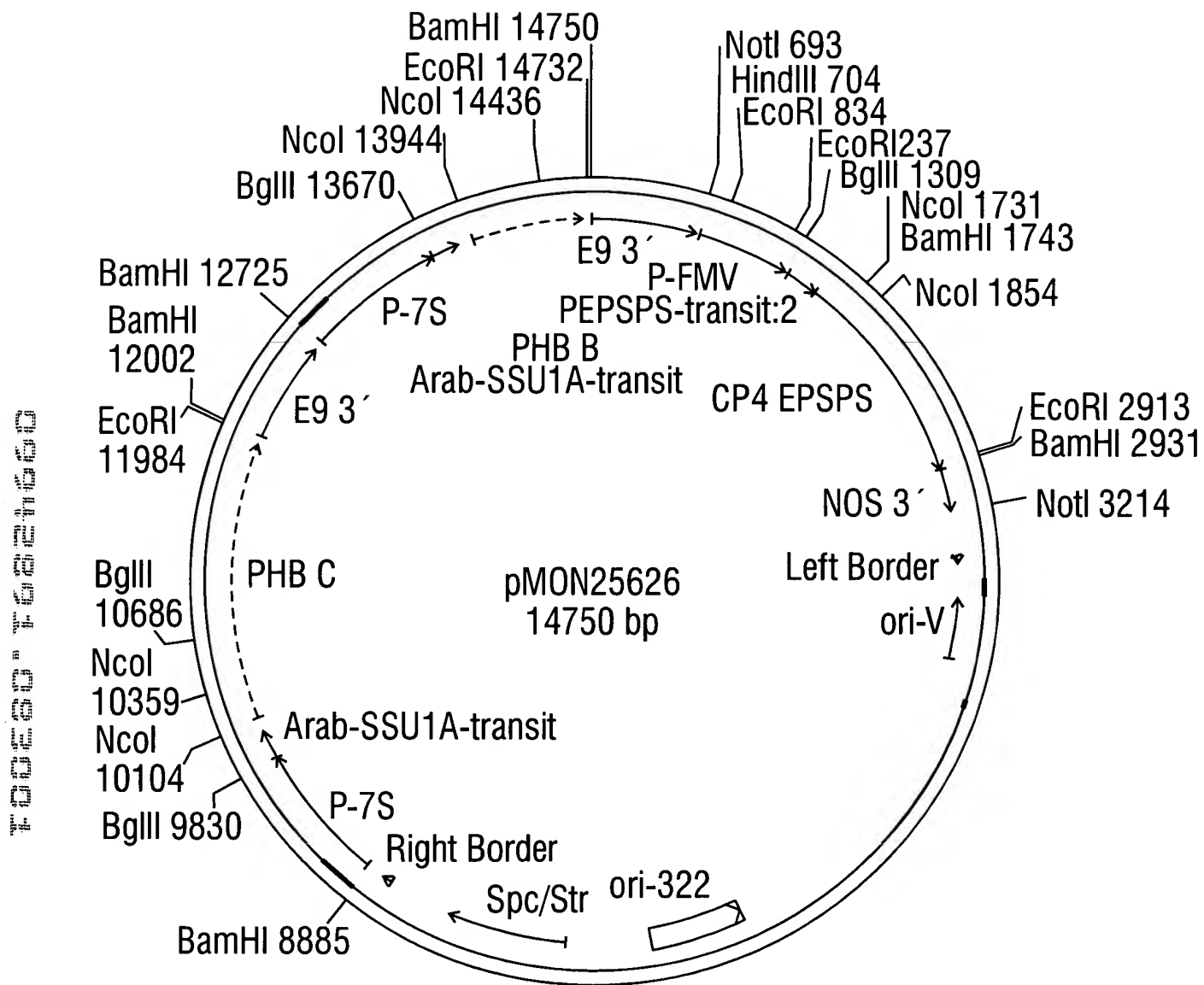


FIG. 21

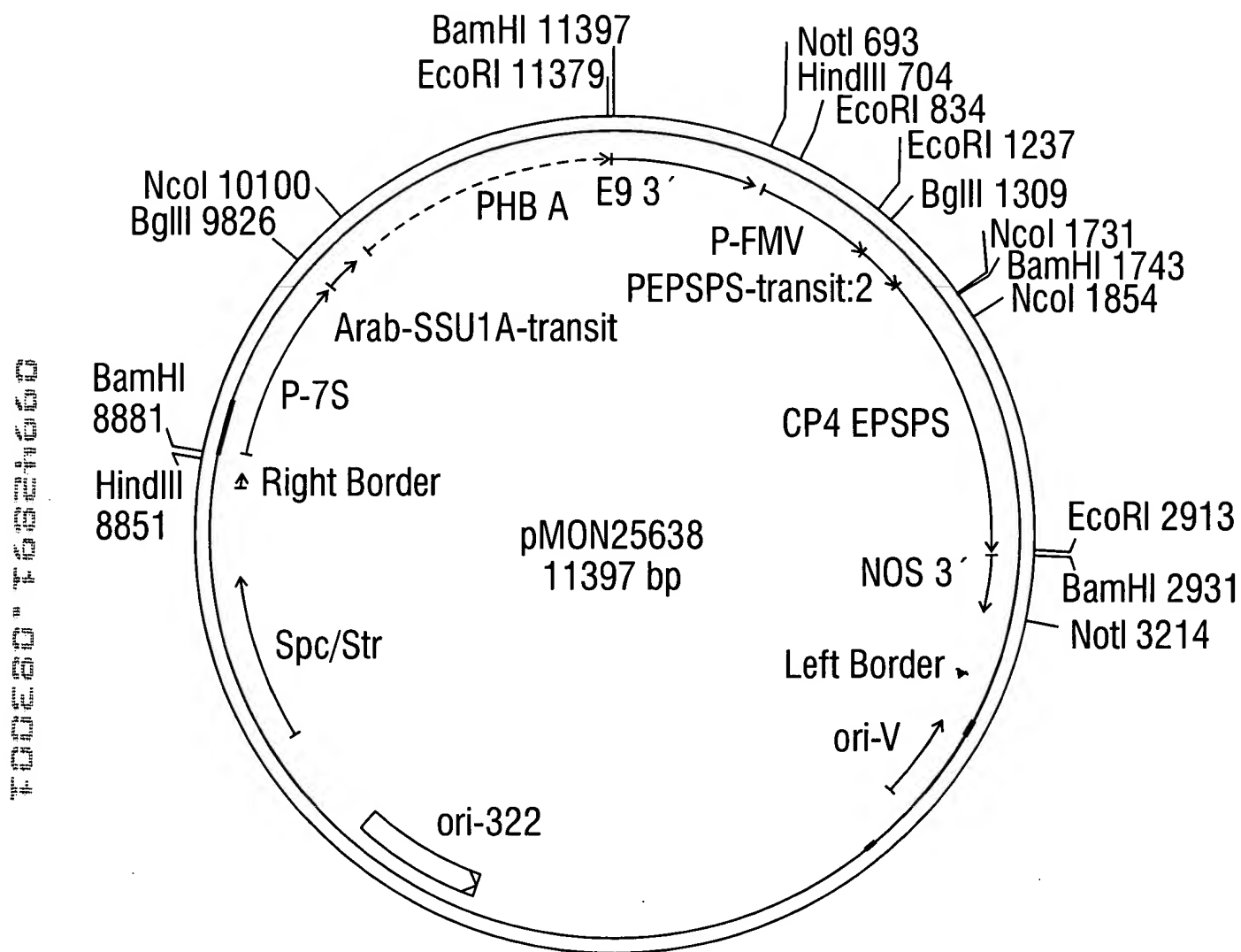


FIG. 22

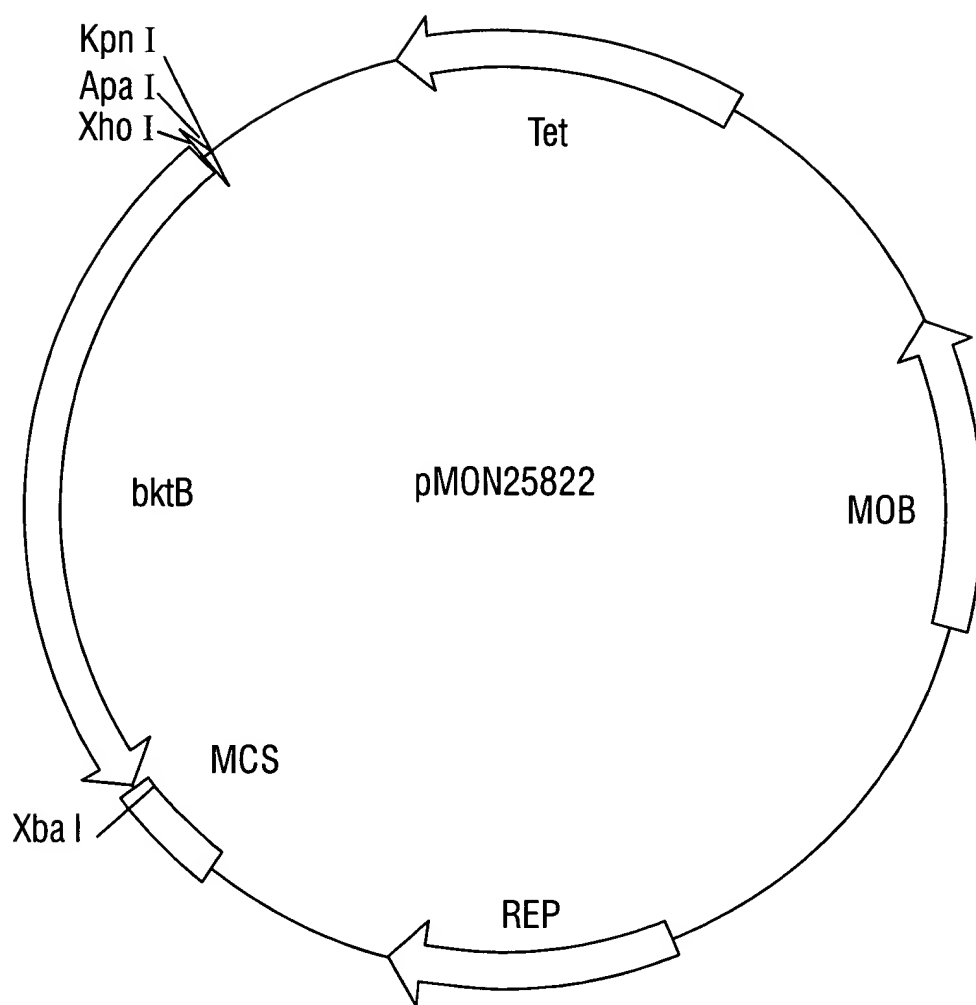


FIG. 23

FIG. 23